

IN THE CLAIMS:

This is a listing of claims as they currently stand:

1. (Currently Amended) A lithographic projection apparatus comprising:
  - a radiation system configured to provide a projection beam of primary radiation;
  - a support structure configured to support patterning structure, the patterning structure constructed and arranged to pattern the projection beam according to a desired pattern;
  - a substrate table configured to hold a substrate;
  - a projection system configured to project the patterned beam onto a target portion of the substrate [[,]]; and
    - a radiation sensor disposed in a path traversed by the projection beam, for receiving primary radiation of the projection beam, said radiation sensor further comprising:
      - a radiation-sensitive material that converts incident primary radiation into secondary radiation;
      - a radiation detector adapted to detect said secondary radiation; and
      - a filter material on an incident side of the radiation sensitive material and adapted to inhibit secondary radiation from traveling away from the radiation detector.
2. (Original) A lithographic projection apparatus according to claim 1, wherein the filter material is transmissive for the primary radiation.
3. (Original) A lithographic projection apparatus according to claim 1, wherein the filter material is reflective for the secondary radiation.
4. (Original) A lithographic projection apparatus according to claim 2, wherein the filter material is reflective for the secondary radiation.
5. (Original) A lithographic projection apparatus according to claim 1, wherein the filter material is in contact with the radiation sensitive material.
6. (Original) A lithographic projection apparatus according to claim 1, wherein said radiation-sensitive material is between the filter material and the radiation detector.
7. (Original) A lithographic projection apparatus according to claim 1, wherein said filter material comprises a semi-transmissive metal layer.

8. (Original) A lithographic projection apparatus according to claim 7, wherein said metal comprises at least one material selected from the group consisting of Aluminium or Chromium.

9. (Original) A lithographic projection apparatus according to claim 1, wherein said primary radiation is of a wavelength of about 150 to about 250 nm.

10. (Original) A lithographic projection apparatus according to claim 1, wherein a thickness of said filter material is less than a wavelength of the primary radiation.

11. (Original) A lithographic projection apparatus according to claim 1, wherein said filter layer is of a thickness of 0.5-30 nm.

12. (Original) A lithographic projection apparatus according to claim 1, wherein said radiation-sensitive material comprises a layer of a thickness of about 1 to about 50 micron.

13. (Original) A lithographic projection apparatus according to claim 1, wherein said radiation-sensitive material is selected from the group consisting of Gd<sub>2</sub>O<sub>2</sub>S:Tb, Y<sub>2</sub>SiO<sub>5</sub>:Ce, Y<sub>2</sub>SiO<sub>5</sub>:Tb, Zn<sub>2</sub>SiO<sub>4</sub>:Mn, CaS:Ce, YAG:Ce, ZnS:Ag and ZnS:Al.

14. (Original) A lithographic projection apparatus according to claim 1, wherein said radiation detector comprises an array of photodiodes, the photodiodes having a pixel size of 5-50 micron.

15. (Original) A lithographic projection apparatus according to claim 1, wherein said filter layer is coated with a passivation layer, said passivation layer comprising at least one of SiO<sub>2</sub>, MgF<sub>2</sub>, and CaF<sub>2</sub>.

16. (Original) A lithographic projection apparatus according to claim 1, wherein said radiation sensor comprises an optical element having a spatially varying transmission or phase distribution.

17. (Original) A device manufacturing method comprising:  
projecting a patterned beam of radiation onto a target portion of a layer of radiation-sensitive material on a substrate;  
using a radiation sensor which is moveable in a path traversed by the projection beam, for receiving primary radiation of the projection beam;

converting incident primary radiation into secondary radiation;  
detecting said secondary radiation; and  
filtering said secondary radiation such that secondary radiation traveling in a direction away from the radiation detector is attenuated.

18. (Original) A device manufactured according to the method of claim 17.
19. (Currently Amended) A lithographic projection apparatus comprising:  
a radiation system configured to provide a projection beam of primary radiation;  
a support structure configured to support patterning structure, the patterning structure constructed and arranged to pattern the projection beam according to a desired pattern;  
a substrate table configured to hold a substrate;  
a projection system configured to project the patterned beam onto a target portion of the substrate, and  
a radiation sensor disposed in a path traversed by the projection beam, for receiving primary radiation of the projection beam, said radiation sensor further comprising:  
a radiation-sensitive material that converts incident primary radiation into secondary radiation;  
a radiation detector adapted to detect said secondary radiation; and  
a filter material on an incident side of the radiation sensitive material and adapted to inhibit secondary radiation from being detected at a position spaced from a general region of initial incidence of the primary radiation.
20. (Currently Amended) A lithographic projection apparatus comprising:  
a radiation system configured to provide a projection beam of primary radiation;  
a support structure configured to support patterning structure, the patterning structure constructed and arranged to pattern the projection beam according to a desired pattern;  
a substrate table configured to hold a substrate;  
a projection system configured to project the patterned beam onto a target portion of the substrate, and  
a radiation sensor disposed in a path traversed by the projection beam, for receiving primary radiation of the projection beam, said radiation sensor further comprising:  
a radiation-sensitive material that converts incident primary radiation into secondary radiation;  
a radiation detector adapted to detect said secondary radiation; and

a filter material on an incident side of the radiation sensitive material that is transmissive for the primary radiation and reflective for the secondary radiation.

21. (New) A lithographic projection apparatus according to claim 1, wherein a wavelength of said primary radiation is shorter than a wavelength of said secondary radiation.
22. (New) A device manufacturing method according to claim 17, wherein a wavelength of said primary radiation is shorter than a wavelength of said secondary radiation.
23. (New) A lithographic projection apparatus according to claim 19, wherein a wavelength of said primary radiation is shorter than a wavelength of said secondary radiation.
24. (New) A lithographic projection apparatus according to claim 20, wherein a wavelength of said primary radiation is shorter than a wavelength of said secondary radiation.